AMENDMEND TO CLAIMS

Please amend claims 1, 3, 11-12, 14, 22-23, and 27-29 as following:

1. (*Currently amended*) A transmitter operating in a switching-mode, the transmitter comprising:

a signal decomposition unit decomposing a modulated digital signal into a first signal and a second signal, both being expressed in polar coordinates;

an adaptive predistorter, coupled to the signal decomposition unit, configured to distort~~ing~~ the first and second signals respectively in accordance with one or more of distorting parameters; and

a phase equalizer, coupled to the adaptive predistorter, configured to equalize~~ing~~ a time delay between the first and second signals in response to a measurement provided by a feedback loop operating on a sample of a RF signal from~~ the transmitter; and~~ a power amplifier, wherein the power

~~a power amplifier,~~ is coupled to a voltage controlled oscillator and controlled by the first signal and a phase-modulated signal coupled from ~~a~~ the voltage controlled oscillator~~,~~ to produce~~ing~~ the RF signal.

2. (*Original*) The transmitter of claim 1, wherein the modulated digital signal is provided from a baseband processor, the first signal is an amplitude signal, and the second signal is a phase signal, and the phase-modulated signal is produced from the second signal.

3. (*Currently amended*) The transmitter of claim 2, wherein the feedback loop includes a down-converter, a demodulation unit coupled to the down-converter and a measurement unit coupled to the demodulation unit, and provides feedback signals to at least the phase equalizer.

4. (*Previously amended*) The transmitter of claim 3, wherein the down-converter converts the sample to a lower frequency to be demodulated in the demodulation unit to

produce a demodulated sample, and the demodulated sample is measured in the measurement unit for producing the feedback signals.

5. (*Original*) The transmitter of claim 1, wherein the first signal is provided to indirectly control the power amplifier.

6. (*Original*) The transmitter of claim 5, wherein the first signal activates a control unit to generate a bias control signal and a voltage signal in response to the first signal.

7. (*Original*) The transmitter of claim 5, further comprising a first modulation path and a second modulation path, both operating on the second signal.

8. (*Original*) The transmitter of claim 7, wherein the first modulation path provides a first input signal to the voltage controlled oscillator in response to the second signal processed in a phase gain unit.

9. (*Original*) The transmitter of claim 8, wherein the second signal, after processed in the phase gain unit, is converted to an analog signal.

10. (*Previously amended*) The transmitter of claim 8, wherein the second modulation path provides a second input signal to the voltage controlled oscillator in response to the second signal processed in a phase offset unit.

11. (*Currently amended*) The transmitter of claim 10, wherein an output of a loop filter with an output of ~~a~~ the phase gain unit are coupled together to modulate the voltage controlled oscillator.

12. (*Currently amended*) A method for controlling a transmitter to operate in a switching-mode, the method comprising:

decomposing a modulated digital signal into a first signal and a second signal, both being expressed in polar coordinates;

distorting the first and second signals respectively in accordance with one or more of distorting parameters; and

equalizing a time delay between the first and second signals in response to a measurement provided by a feedback loop operating on a sample of a RF signal from ~~the transmitter; and~~ a power amplifier, wherein the power amplifier ~~producing the RF signal in a power amplifier~~ is coupled to a voltage controlled oscillator and controlled by the first signal and a control signal coupled from ~~a~~ the voltage controlled oscillator.

13. (*Original*) The method of claim 12, wherein the modulated digital signal is provided from a baseband processor, the first signal is an amplitude signal, and the second signal is a phase signal, and the control signal is produced from the second signal.

14. (*Currently amended*) The method of claim 12, further comprising providing feedback signals by the feedback loop to at least a phase equalizer, the feedback loop formed by a down-converter, a demodulation unit coupled to the down-converter and a measurement unit coupled to the demodulation unit.

15. (*Previously amended*) The method of claim 14, further comprising converting the sample to a lower frequency to be demodulated in the demodulation unit to produce a demodulated sample, wherein the demodulated sample is measured in the measurement unit for producing the feedback signals.

16. (*Original*) The method of claim 12, wherein the first signal is provided to indirectly control the power amplifier.

17. (*Previously amended*) The method of claim 16, further comprising activating a control unit by the first signal to generate a bias control signal and a voltage signal in response to the first signal.

18. (*Previously amended*) The method of claim 16, further comprising providing a first modulation path and a second modulation path, both operating on the second signal.

19. (*Previously amended*) The method of claim 18, further comprising providing a first input signal by the first modulation path to the voltage controlled oscillator in response to the second signal processed in a phase gain unit.

20. (*Previously amended*) The method of claim 19, comprising converting the second signal, after processed in the phase gain unit, to an analog signal.

21. (*Previously amended*) The method of claim 19, further comprising providing a second input signal in the second modulation path to the voltage controlled oscillator in response to the second signal processed in a phase offset unit.

22. (*Currently amended*) The method of claim 21, further comprising forming the second modulation path by a phase-locked loop (PLL) that is formed by an adder adding an output of a loop filter with a phase gain to modulate the voltage controlled oscillator in the phase-locked loop.

23. (*Currently amended*) A method for controlling a transmitter to operate in a switching-mode, the method comprising:

compensating a frequency drift and other non-linear effects of a modulated voltage-controlled-oscillator (VCO) and a power amplifier by predistorting a baseband amplitude signal and a phase signal in accordance with one or more distorting parameters that are determined based on a sample of an output of the transmitter, wherein the baseband amplitude signal and the phase signal are expressed in terms of polar coordinates, and the sample is down-converted with an output from the VCO ~~before being~~ and demodulated to facilitate a predistortion calibration in a predistortion calibration unit to

update the distorting parameters, and one output from the predistortion calibration unit used to adjust the phase signal;

providing a phase-locked loop (PLL) with an adaptive phase gain and a phase offset control in response to the phase signal;

modulating the power amplifier with the baseband amplitude signal and an output coupled from the modulated voltage controlled oscillator (VCO).

24. (*Original*) The method of claim 23, further comprising:

demodulating samples of an output of the power amplifier and the modulated voltage controlled oscillator to regenerate a first signal, a second signal and a third signal in a digital format;

comparing the demodulated first and second signals to the baseband amplitude signal and phase signals with reference to the third signal, respectively; and

producing feedback control signals to update the one or more distorting parameters, and other related parameters.

25. (*Original*) The method of claim 24, still further comprising equalizing a delay time between the baseband amplitude and phase signals.

26. (*Original*) The method of claim 25, wherein the delay time is provided by one of the feedback control signals.

27. (*Currently amended*) The method of claim 23, further comprising:

providing a control input to the modulated voltage-controlled oscillator (VCO) that has a phase-modulated output;

comparing two phase-modulated signals in a phase detector to produce an output representing the phase difference of the two phase-modulated signals, wherein one of the phase-modulated signals is a reference frequency signal from a controller and the other one of the phase-modulated signals is from a feedback frequency divider in the phase-locked loop;

coupling a loop filter to the output of the phase detector and to the input of the VCO;

including a feedback frequency divider in a feedback loop which is coupled to the output of the VCO;

~~coupling a reference frequency signal to another input of the phase detector;~~ and

receiving a signal in a modulator from an adder in the phase-locked loop that couples a phase-modulated baseband signal and a carrier frequency signal together to produce a digital bit stream used to control a divisor of the feedback frequency divider.

28. (*Currently amended*) The method of claim 23, wherein a controller receives a phase-modulated baseband signal and a carrier frequency signal to produce a digital bit stream used to control a reference frequency coupled to an input of a phase detector in the phase-locked loop.

29. (*Currently amended*) The method of claim 23, wherein the VCO operates by:

coupling the phase-modulated baseband signal to an input node of the VCO which is used by the phase-locked loop;

using an adaptive phase gain to scale the phase-modulated baseband signal before being coupled to the input node of the VCO of the phase-locked loop;

using an adaptive phase offset to change the phase-modulated baseband signal which is coupled to an input of the phase locked loop; and

using an adaptive digital predistortion signal to facilitate ~~generate~~ formation of the adaptive phase gain and phase offset signals.